## Remarks

The Examiner is thanked for the Office Action dated 05/08/01 and the allowance of claims 1-14, 17-19, 49, 51, 52 and 55.

As to the remainder of the claims, the only rejections remaining are 35 U.S.C. 112 indefiniteness rejections. It is believed that in view of the present amendments these rejections should now also be withdrawn as discussed below. Claims 53, 54 are presently canceled and new claims 56, 57 added. Claims 1-19, 46-52, 55-57 are therefore pending in the present application.

The Examiner rejected claim 15 on the basis of indefiniteness of the language "an accuracy of the encoder". Claim 15 has been amended to recite "an accuracy of the encoder to detect the position of the dispensing head or substrate" (as recited, for example, on page 4, lines 25-26 of the present application).

Claims 16, 46, 48 were rejected as indefinite for the use of the phrase "an accuracy in an ability". The phrase "in an ability" has been canceled from each of the foregoing claims so that claims 16, 48 now reads "accuracy of the transport system to move the substrate to an expected location in response to a command" (claim 46 reads the same except "or head" remains after "substrate").

Claim 47 was rejected as indefinite for use of the term "deviation of actual movement". Claim 47 has been amended to now recite "an accuracy of the transport system to move the substrate or head along a corresponding nominal axis of movement."

Claim 50 was rejected as indefinite for the use of the term "effect of thermal expansion". This claim has now been amended to recite "wherein the operating parameter is a position of a component which varies due to thermal expansion".

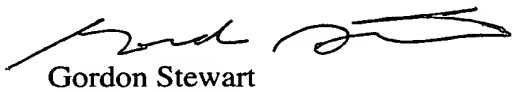
Claims 53 and 54 were rejected as indefinite for use of the term "dynamic position". These claims have now been canceled.

New dependent claims 56, 57 recites that the same error affects less than all of the array features (as described, for example, on page 15, line 30 to page 16, line 2).

In view of the above amendments and discussion, the remainder of the pending claims should now be in condition for allowance in addition to the previously allowed claims 1-14, 17-19, 49, 51, 52 and 55. If the Examiner is of the view that there are any outstanding issues, he is invited to call Gordon Stewart at (650)485-2386.



Respectfully submitted,



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APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

1. (PREVIOUSLY AMENDED) A method of fabricating an addressable array of biopolymer probes on a substrate according to a target array pattern using a deposition apparatus which, when operated according to a target drive pattern based on nominal operating parameters of the apparatus, provides the probes on the substrate in the target array pattern, the method comprising:

(a) examining at least one operating parameter for an error from a nominal value which error will result in use of the target drive pattern producing a discrepancy between the target array pattern and an actual array pattern deposited;

(b) when an error is detected deriving, based on the error, a corrected drive pattern different from the target drive pattern such that use of the corrected drive pattern results in a reduced discrepancy between the target and actual array patterns; and

(c) operating the deposition apparatus according to the corrected drive pattern so as to fabricate the array.

2. A method according to claim 1, additionally comprising operating the deposition apparatus according to the corrected drive pattern.

3. A method according to claim 1 wherein the probes are DNA or RNA probes.

4. A method according to claim 1 additionally comprising saving the target drive pattern in a memory of the deposition apparatus.

5. A method according to claim 1 additionally comprising saving the target drive pattern in a memory of the deposition apparatus, and wherein the corrected drive pattern is saved in the memory.

6. A method according to claim 1 wherein the corrected drive pattern is derived without obtaining a target drive pattern.

7. (PREVIOUSLY AMENDED) A method according to claim 4 wherein:

the deposition apparatus includes a dispensing head to dispense fluid droplets containing the probes or probe precursors, and a transport system to move at least one of the dispensing head and substrate relative to the other as the droplets are dispensed from the head, so as to form the array; and

the corrected drive pattern controls operation of the transport system.

8. (PREVIOUSLY AMENDED) A method according to claim 1 wherein:

the deposition apparatus includes a dispensing head to dispense fluid droplets containing the probes or probe precursors, and a transport system to move at least one of the dispensing head and substrate relative to the other as the droplets are dispensed from the head, so as to form the array;

the target drive pattern controls operation of the transport system; and

the operating parameter is the position of the substrate or dispensing head, which is examined by viewing the substrate or dispensing head.

9. A method according to claim 8 wherein the operating parameter is examined by viewing a fiducial mark on the dispensing head or substrate

10. A method according to claim 1 wherein:

the deposition apparatus includes a dispensing head with multiple nozzles to dispense fluid droplets containing the probes or probe precursors, and a transport system to move at least one of the dispensing head and substrate relative to the other as the droplets are dispensed from the head, so as to form the array;

the drive pattern controls operation of the transport system;

the operating parameter is the position of the substrate or dispensing head, or orientation of a nozzle, and is examined by viewing the substrate, dispensing head, or nozzle, or a droplet pattern previously dispensed from the head.

11. A method according to claim 7 additionally comprising saving the target drive pattern in a memory of the deposition apparatus, and wherein the corrected drive pattern is saved in the memory, prior to operating the dispensing head and transport system to form the array.

12. A method according to claim 7 additionally comprising saving the target drive pattern in a memory of the deposition apparatus, and wherein the corrected drive pattern is derived by modifying, based on the detected error, instructions to at least one deposition apparatus component based on the target drive pattern during operation of the dispensing head and transport system to form the array.

13. A method according to claim 1 wherein the at least one parameter is the position of the substrate in the deposition apparatus.

14. A method according to claim 7 wherein the at least one parameter is a position of the dispensing head.

15. (TWICE AMENDED) A method according to claim 7 wherein the deposition apparatus further includes a position encoder to detect the position of the dispensing head or the substrate, and wherein the at least one parameter is an accuracy of the encoder to detect the position of the dispensing head or substrate.

16. (AMENDED) A method according to claim 7 wherein the at least one parameter is the accuracy ~~in an ability~~ of the transport system to move the substrate to an expected location in response to a command.

17. A method according to claim 7 wherein the dispensing head has multiple droplet dispensing nozzles, and wherein the at least one parameter is a position of a nozzle.

18. (PREVIOUSLY AMENDED) A method of fabricating an addressable array of biopolymer probes on a substrate according to a target array pattern using a deposition apparatus which, when operated according to a target drive pattern based on nominal operating parameters of the apparatus and which is stored in a memory of the deposition apparatus, provides the probes on the substrate in the target array pattern, the method comprising:

when an error from a nominal value exists in at least one operating parameter, which error will result in use of the target drive pattern producing a discrepancy between the target array pattern and an actual array pattern deposited then deriving, based on the error, a corrected drive pattern from the target drive pattern such that use of the corrected drive pattern results in a reduced discrepancy between the target and actual array patterns; and

operating the deposition apparatus according to the corrected drive pattern so as to fabricate the array. .

19. A method according to claim 18 wherein the corrected drive pattern is saved in the memory.

46. (AMENDED) A method according to claim 1 wherein:

the deposition apparatus includes a dispensing head to dispense fluid droplets containing the probes or probe precursors, and a transport system to move at least one of the dispensing head and substrate relative to the other as the droplets are dispensed from the head, so as to form the array;

the drive pattern controls operation of the transport system; and

the at least one parameter is an accuracy ~~in an ability~~ of the transport system to move the substrate or head to an expected location in response to a command.

47. (AMENDED) A method according to claim 46 wherein the at least one operating parameter is an accuracy of the transport system to move ~~a deviation of actual movement of~~ the substrate or head along~~from~~ a corresponding nominal axis of movement.

48. (AMENDED) A method according to claim 46 wherein the at least one operating parameter is an accuracy ~~in an ability~~ of the transport system to move the substrate to an expected location in response to a command.

49. A method according to claim 1 wherein the operating parameter is a fluid volume dispensed by the deposition apparatus.

50. (AMENDED) A method according to claim 1 wherein the operating parameter is a position of a component which varies due to ~~an effect of~~ thermal expansion.

51. A method according to claim 1 wherein:

the deposition apparatus includes a dispensing head to dispense fluid droplets containing the probes or probe precursors, and a transport system to move at least one of the dispensing head and substrate relative to the other as the droplets are dispensed from the head, so as to form the array;

the apparatus further includes an encoder to provide data on the location of the substrate or head; and

the at least one operating parameter is an encoder error.

52. A method according to claim 1 wherein:

the deposition apparatus includes a dispensing head with multiple nozzles to dispense fluid droplets containing the probes or probe precursors, and a transport system to move at least one of the dispensing head and substrate relative to the other as the droplets are dispensed from the head, so as to form the array;

the drive pattern controls operation of the transport system;

the operating parameter is the position of the dispensing head, or orientation of a nozzle, and is examined by viewing the dispensing head, or nozzle.

~~53. (NEW) A method according to claim 1 wherein the position is a dynamic position.~~

~~54. (NEW) A method according to claim 14 wherein the position is a dynamic position.~~

55. A method according to claim 49 wherein the deposition apparatus comprises multiple jets for dispensing droplets, and wherein the corrected drive pattern comprises an instruction to switch to a different jet when a deviation from nominal volume is encountered for one jet which is more than a predetermined tolerance.

56. (NEW) A method according to claim 1 wherein the same error affects less than all of the array features.

57. (NEW) A method according to claim 14 wherein the same error affects less than all of the array features.